

PROJECT NUMBER: 30160 06-81198.16

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DATE: January 24, 2007

STORK TWIN CITY TESTING CORPORATION  
662 Cromwell Avenue  
St. Paul, Minnesota 55114

OPEN FLAME EVALUATION CONDUCTED ON A  
MICHIGAN STATE INDUSTRIES  
MODEL: 26F-3290 MRFFB-A

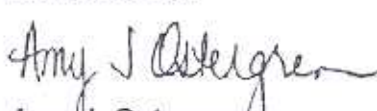
IN ACCORDANCE WITH  
CONSUMER PRODUCT SAFETY COMMISSION  
16 CFR PART 1633  
"STANDARD FOR THE FLAMMABILITY  
(OPEN FLAME) OF MATTRESS SETS"

Prepared for:  
MICHIGAN STATE INDUSTRIES  
Attn: Mr. John Hession  
3500 NORTH ELM  
JACKSON, MI 49201

Prepared by:

  
Darious Smith  
Engineering Technician  
Product Evaluation Services

Reviewed by:

  
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Project Engineer  
Product Evaluation Services  
Phone: (651) 659 - 7303

The test results contained in this report pertain only to the samples submitted for testing and not necessarily to all similar products.

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**OPEN FLAME EVALUATION – 16 CFR 1633**

**INTRODUCTION:**

This report presents the results of a full scale **16 CFR 1633** open flame test conducted on the following:

PROJECT #:	30160 07-81198 Michigan State Industries		
TEST SEQUENCE #:	16		
TEST REQUESTOR: name: address:	John Hession 3500 North Elm Jackson, MI 49201		
TEST CONFIGURATION:	Test Room - 12'x10'x8'		
PRODUCT MANUFACTURER or SUPPLIER:	Michigan State Industries		
PRODUCT ID MARKS & DESCRIPTION: Prototype ID:	MODEL: 26F-3290 MRFFB-A		
MATTRESS: width x length x thickness (in):	38.00 x 75.00 x 7.00		
FOUNDATION: width x length x thickness (in):	-- x -- x --		
CONDITIONING ROOM: temp (°F) / R.H. (%):	70.0 / 20		
BURN ROOM: temp (°F) / R.H. (%):	70.0 / 19		
TIME LAPSE: condition room to burner ignition (min):	15		
TOTAL INITIAL MASS (kg):	0.00		
TEST DATE:	01-16-2007		
COMMENTS:	NAVY VCC AT 2:40 INTO THE TEST		
Test Results	Data	Criteria	Pass/Fail
Peak rate of heat release (kW):	25.5	200 kW	Pass
Time @ peak release (mm:ss):	00 : 27	--	-
Total heat released @ 10 min (MJ):	2.2	15.0 MJ	Pass

**THE TEST SAMPLE MET THE REQUIREMENTS OF 16 CFR 1633**

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**OBSERVATIONS:**

Time (mm : ss)	Observation
00 : 00	Burner ON
00 : 50	Side Burner OFF
01 : 10	Top burner OFF
03 : 44	All signs of combustion have ceased

**STANDARD TEST PROCEDURE:**

Unless stated otherwise in the introduction of this report, this test was conducted in accordance with Consumer Product Safety Commission 16 CFR Part 1633, test configuration B, the room-based configuration. A brief summary is detailed below:

The mattress / mattress set was allowed to condition for at least 48 hours in conditions compliant with Consumer Product Safety Commission 16 CFR Part 1633 (temperature: greater than 65°F and less than 77°F; relative humidity: less than 50%). The test area conditions also were also kept compliant with 16 CFR Part 1633 (temperature: greater than 59°F and less than 80.6°F; relative humidity: less than 75%). A time span of no more than 20 minutes was allowed between the mattress set leaving the conditioning room and burner ignition, this time was recorded and reported in the data table above.

The instrumentation was calibrated and zeroed prior to the evaluation. After the specimen was placed on the bed frame inside the test room, the burner alignment procedure was performed. Data logging and video were obtained for 2 minutes prior to burner ignition. The burner application time was 70 seconds for the top burner and 50 seconds for the side burner. Upon completion of the flame application times, the top burner was carefully lifted off of the mattress surface and the unit removed from the test room.

The test proceeded until either all combustion had ceased, 30 minutes had passed, or the development of a fire of such size as to require suppression for the safety of the facility.

**REMARKS:** Due to the nature of the test, the specimen was discarded upon completion of the procedure.

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SAMPLE DESCRIPTION: 26F-3290 MRFFB-A

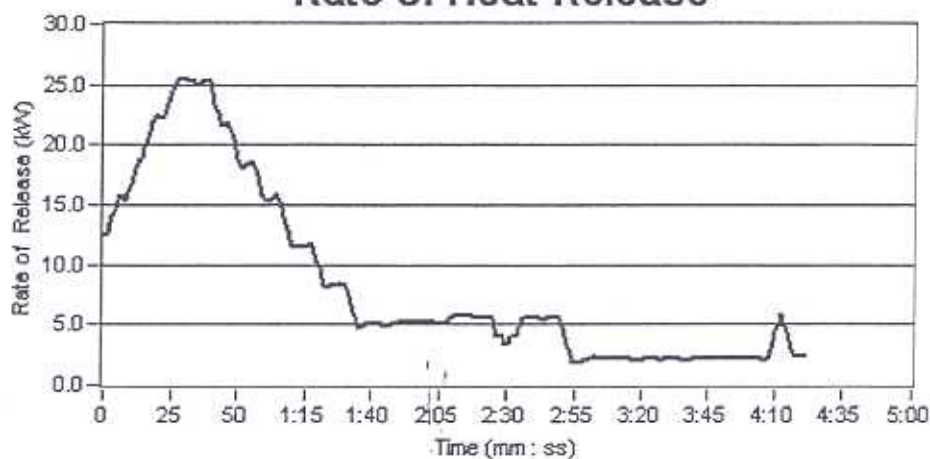
Product: MATTRESS INNERSPRING, SMOOTH TOP WATERPROOF	Sample ID or Model#: 26F-3290 MRFFB-A	
Fabric Type (include % composition and weight): SURECHECK MR FFB	Fabric Color: NAVY	
Sample Weight: 45.5 LBS	Weight of Combustibles:	
Weight of Frame: 22lbs	Interliner/Blocking Layer Description (if present): Modacrylic/fiberglass laminated to nylon ticking – All seams sewn with Kevlar Thread	
Fill Description (with order of Layering): FLEXSPAN RESIN-BONDED PAD, FR Cotton batting POLYURETHANE TOPPER CA117	Mattress Dimensions: 38" x 75" x 7"	Foundation Dimensions:

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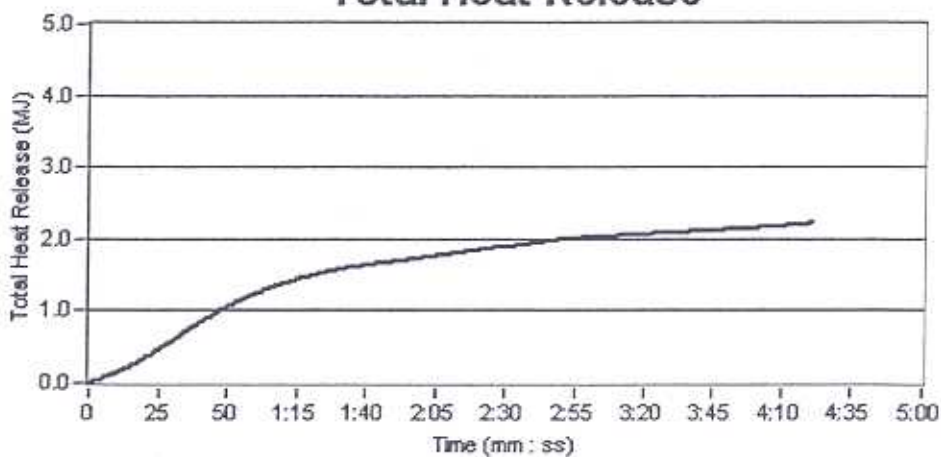
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GRAPHS:

**Rate of Heat Release**



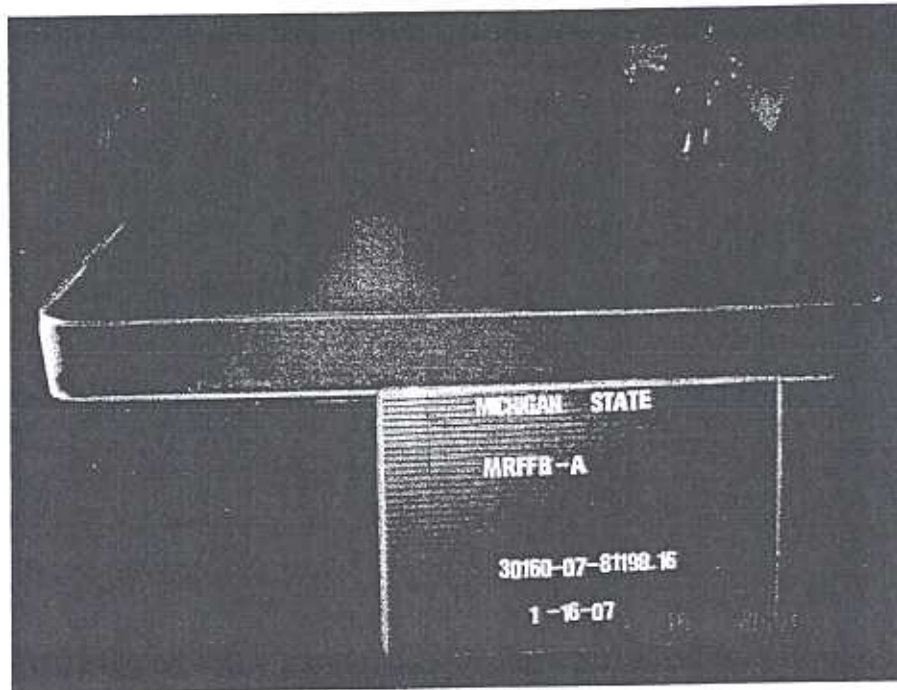
**Total Heat Release**



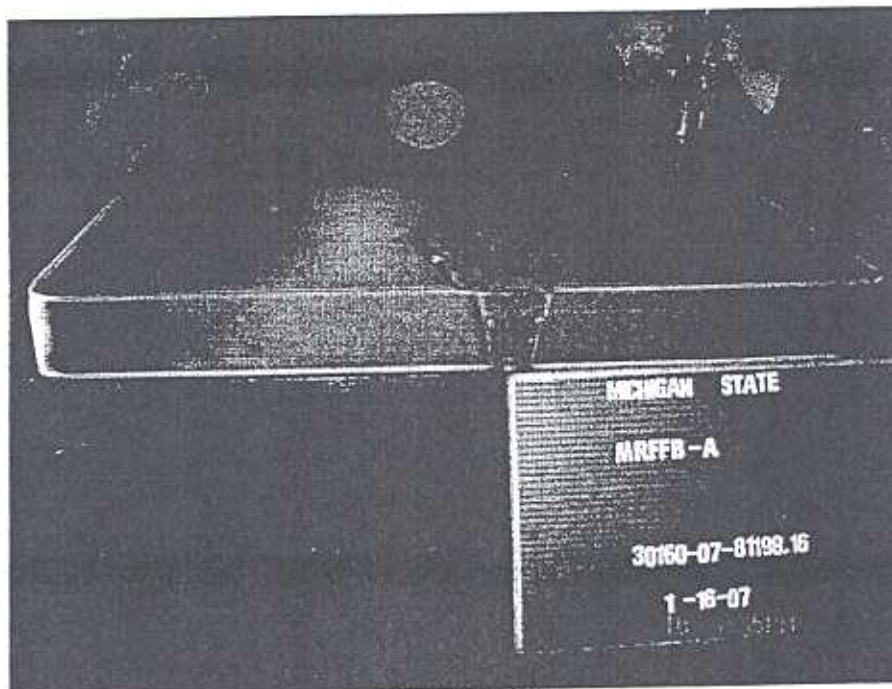
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PHOTOS:



BEFORE TEST



AFTER TEST

Michigan State Industries  
3500 North Elm  
Jackson, MI 49201  
Attn: John Hession  
Ph: (517) 780-5169 Fax: (517) 780-5100  
Project Number: 30160 06-80400

Material Testing - Non-Destructive Testing  
Product Evaluation - Construction Materials  
662 Cromwell Avenue  
St. Paul, MN 55114  
USA  
Telephone : (651) 645-3601  
Telefax : (651) 659-7348  
Website : www.storktct.com

Sample Size: 39" x 75" x 7" Sample ID: Twin - Navy Blue  
26F -3290 MRFFB

Date: October 31, 2006  
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### HEXAGONAL ROLLER TEST RESULTS: 100,000 CYCLE TEST

ASTM F1566-99 - Load Deflection Data (see NOTE below)

Deflection	Load (lbs) Before Test	Load (lbs) @ 100K cycles	% Change
0.5"	8.2	14.1	72.0
1.0"	24.1	37.2	54.4
1.5"	47.4	65.9	39.0
2.0"	77.2	98.2	27.2
2.5"	112.3	133.9	19.2
3.0"	150.7	173.3	15.0
<b>Average</b>	<b>70.0</b>	<b>87.1</b>	<b>24.5</b>
<b>Height @ 1lb</b>	8.679	7.96	<b>-0.72</b>

NOTE: A negative percent change indicates the mattress has softened whereas a positive percent change indicates the mattress is firmer (relative to the "before test" values). Ideally the closer this value is to zero, the better. After 5-10 years of use, the consumer desires the mattress to retain the same relative "feel" it exhibited during the initial experience. Typically, the bedding industry prefers to see the percent change under 25% in either direction (softer or firmer).

### HEXAGONAL ROLLER TEST PROCEDURE:

The mattress was subjected to 100,000 cycles of the Hexagonal Roller procedure per ASTM F1566-99 part 7. Load deflection measurements were obtained in accordance with ASTM F1566-99 part 6 (center position) prior to testing and after 100K cycles. This was accomplished with a 13.5" circular platen.

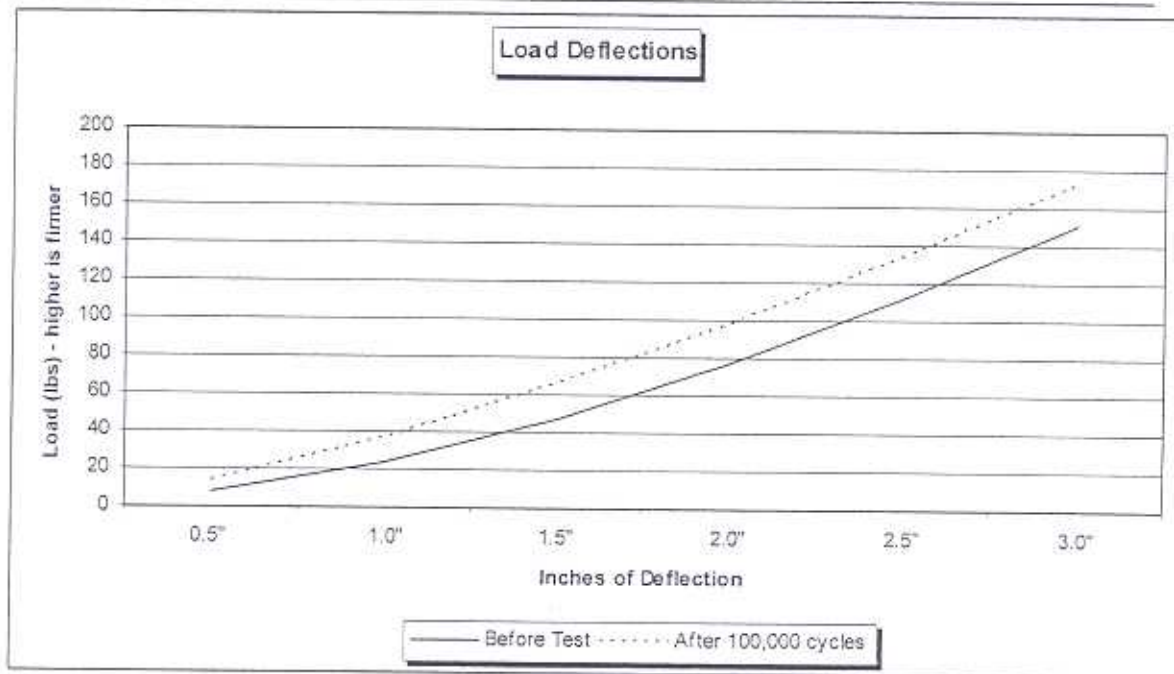
Height measurements were gauged by applying a 1 pound contact force to the mattress surface with the 13.5" circular platen. The mattress was allowed to recover for 1 hour prior to height and load deflection measurements.

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The tested sample will be retained for 14 days from the date of this report and then discarded unless we received written authorization requesting otherwise. Return shipping, if requested, will be paid by the customer.


**REMARKS:**

Wear was noticeable on the material covering the mattress towards the end of roller testing. A noticeable indentation was apparent in the roller path on the mattress.

**Reviewed By:**

  
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**Reviewed By:**

  
Amy J. Ostergren  
Project Manager  
Product Evaluation Department

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